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## STATUS OF RESEARCH IN AMERICAN GEOGRAPHY

*One of a series of ten reports prepared by  
Committees of the Division of Geology and  
Geography, National Research Council, under  
contract with the Office of Naval Research*

Contract N7onr-29124

### REGIONAL STUDY WITH SPECIAL REFERENCE TO GEOGRAPHY

Derwent Whittlesey,  
Chairman

DIVISION OF GEOLOGY AND GEOGRAPHY  
NATIONAL RESEARCH COUNCIL  
WASHINGTON, D. C.

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J. R. Whitaker

Division of Geology and Geography

National Research Council

This is one of ten reports prepared to evaluate and  
describe the current status and future potential of  
research in various fields of American Geography.  
The coordinators of the study were Preston E. James  
and Clarence F. Jones.

National Academy of Sciences - National Research Council

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## REGIONAL STUDY, WITH SPECIAL REFERENCE TO GEOGRAPHY<sup>#</sup>

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<sup>#</sup> The committee which prepared this chapter is as follows: P. E. James, C. F. Jones, S. B. Jones, L. E. Klimm, James Malin, H. H. McCarty, R. S. Platt, Kirk Stone, J. R. Whitaker, and Derwent Whittlesey, Chairman.

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Geographers are in general agreement that regional study is an important part of their craft, and this chapter is an attempt to analyze the corpus regionis as an aspect of American geography. Geography does not claim exclusive rights to the regional concept, which it shares with both ecology and history. Each of the three disciplines has its own way of treating terrestrial space, i.e. the area at and near the surface of the earth occupied by inorganic, biotic, and cultural phenomena, and existing through time.

Geography organizes these elements according to spatial spread; ecology according to groupings of natural or societal phenomena; history, according to time. These distinctive approaches to regional study may be clarified by restatement in a slightly elaborated form.

1. Geography centers on the areal differentiation, interconnections, and order found in earth-space. It reaches back through time for pertinent space-order of the past, and it sometimes finds a basis for forecasting trends in space-order. It utilizes the contributions of all ecological disciplines to the extent that they aid in interpreting spatial distributions.

2. Each branch of ecology <sup>#</sup> focuses on the association of a

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# Ecology, as used in this chapter, refers to the distributional aspects of all the disciplines that are neighbors to geography, including climate, surface, and soil, as well as the more familiar plant and animal ecology and the ecological aspects (now coming to the fore) of economics, sociology and government. The distinction between ecology and topical geography is not always recognized by workers in those fields, but it may be illustrated from botany, the oldest of the ecological disciplines. Floristic plant ecology studies plant associations as one of the aspects or processes of botany, whereas plant geography is concerned with regional variation of plant associations in both their setting of natural origins and their application to human use.

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particular class of phenomena and their processes. Together they range through inorganic, biotic, and cultural classes. Time and space serve ecology as points of reference.

3. History is dominated by human events through time. It employs subdivisions of space as a convenient device for keeping historical data within human comprehension.

While the three aspects of regional study are on an equal footing and can be clearly distinguished, studies by individuals frequently cut across the boundaries, to mutual advantage. The rest of this chapter is devoted to the geographic region and regional geography, leaving practice to the conscience of the practitioner.

#### ANTECEDENTS OF THIS REPORT

The committee making this report believes that the following findings embody the views of the American geographic profession concerning the region. Those views were ascertained in several ways: by an outline circulated at the beginning of 1948, followed by successive revisions pursuant upon comments and contributions received; by testing in half a dozen university seminars; and by open discussion at the 1950 meeting of the Association of American Geographers. The presentation in this report is intended to strike a balance between general American practice in regional study and goals envisioned as attainable by students who have deeply probed the subject. In this balance is combined the inventory and the prospect called for by the title of the volume of which this chapter forms a part.

It is clear that regional study is in active evolution. Hence the committee submits its findings as a report on the current status, and assumes that they will be continuously modified and elaborated by all who engage in

regional study. Meanwhile, the statement of present views and judgments may be serviceable as a frame of existing ideas and procedures, and a springboard for further refinement and new conceptions. The pool of American geographic thinking on regions brims with the inflow of comments and ideas from many sources. Indeed, so large a part of the report springs from these currents and sources that published papers are cited only to trace some specific origin or direction of the flow. Besides those few publications, account must be rendered of the great volume of books and papers that have served as a background of this report and the platform on which it stands.

First in number and variety are the thousands of studies of individual regions of many types. Curiosity about regions has been part of geographers' thinking ever since the study of the earth took on new life with the Revival of Learning in Europe. No studies of individual regions are listed here, because complete coverage is impossible and any selection could hardly amount to more than random choice. All the same, a wide variety of such regional presentations has been constantly in the minds of all who have contributed to this report.

Many an author, in presenting a particular region, has incorporated an explicit statement of his philosophy about regions. No attempt has been made to garner that scattered harvest, rich though it might be. Instead, the titles cited are confined to history, definition, classification, and technique; in broad terms, to papers and books dealing with the nature of the region and of regional study. Moreover, they are drawn mainly from American participation in the progress of regional thinking. Care has been taken to cite works that incorporate footnotes and lists which in sum extend the bibliography to reasonably complete coverage. To them the reader

is referred for further guidance.

### The Rising Tide of Interest

The beginnings of organized regional study were made in northwestern Europe after 1750. They have been traced by Richard Hartshorne /1:35-93/. In the United States of America, geography was popularized a little later as compendious description of the earth and of its parts arranged by political divisions. Critiques by Ralph H. Brown disclose the character and range of regional material published around 1800 /2; 3/. An account of the regional concept in the United States, with appended bibliographies has recently been written by Mood and Carstensen in the book on regionalism edited by Merrill Jensen /4:5-118/.

At the level of university scholarship, the study of the earth by Americans was imported piecemeal from various European sources between 1860 and 1925, but not always from exponents who were most representative or influential in their homelands /1:96-129/. The study of regions as a useful means of investigating the earth entered the universities only sporadically until after 1900. In subsequent years, as geography took its place in university curricula, the several continents were customarily studied as regions. Courses so organized were likely to begin with aspects of the natural environment, such as climate and terrain, and to conclude with aspects of human geography. The center of interest was the regional variety within the continent under study, and not the systematic exemplification of geographic topics. In view of this practice, it is surprising that no reasoned statement of regional study appears to have been published by any American geographer before World War I.

In 1907, fifty-five members of the Association of American Geographers reported the branches of geography in which they were most interested /5/. Only one (Isaiah Bowman) specified regional geography. In 1910, Walter S. Tower, at the time an incisive teacher of regional geography, published an outline critique of the geographic discipline. Among his ten subdivisions of the subject matter, neither regional geography nor the region appears /6/. Four years later, he and eight others, of twenty-five American geographers, rated regional studies among the three most needed lines of investigation in the geographic disciplines. Of the nine, however, several were thinking exclusively of regional aspects of the natural environment /7/. The emphasis laid upon regions of natural environment before World War I has been summarized by W. L. G. Joerg /8/.

The dawning American interest in the region, whether for its own sake or to serve as a tool, reflected European movements at the turn of the century. In all three principal centers of geographic thought, the region was revived as a key subject for both technical and empirical exemplification. Vidal de la Blache set the pace by encouraging students under his supervision to write monographs on the regions of France. Several of these became classic expositions of regional geography /e.g. 9; 10/. Hettner led the way for German geographers by stating, first in 1905 and more fully in 1927, the place of regional study in geography /11:217-218; 293-317; 398-404/. In Britain, the interest inspired by Herbertson /12/ remained focused on natural regions, both as subdivisions of the earth and as aggregations of basic components for regional study. Among others, Roxby and Unstead expressed this continuing emphasis /13; 14/.

The concept of aggregated natural regions found little favor in America, where investigation focused on component elements of the natural environment. Study of geomorphic regions initiated by Powell /15/ was continued under the leadership of Fenneman for the United States /16/. It was projected to cover Canada by Thayer /17/. A parallel study of climatic regions took the form of constructive criticisms of Koeppen's classification, (adumbrated in 1900 and elaborated in 1931). These are reviewed by Hare /18/. Essays into regional subdivision of other elements of the natural environment have likewise been greeted attentively. Most of them have originated with ecological specialists in the natural sciences, but they are found especially useful if a geographer has had a hand in their production as in a paper by C. C. Adams /19/.

Similar studies undertaking to recognize regions of the several cultural elements are few, recent, and less widely accepted than those dealing with the natural elements. Several remain to be attacked. The state of advancement currently reached is suggested by the range of world maps in Goode's School Atlas, revised by Espenshade /20:20-46/.

The germinating preoccupation with regions found fertile ground at the end of World War I. The then young geographers comprised the first considerable spate trained in the universities as geographers rather than as geologists. Their wartime service turned them still further toward aspects of geography other than geomorphology. Their attention was directed toward regions by a combination of unplanned circumstances.

#### Discussion and Publication

Within half a dozen years, translations or paraphrases in English

spread before them viewpoints from continental Europe: Vidal de la Blache and Brunhes in France, Sten De Geer in Sweden, and Sauer paraphrasing German work /21; 22; 23; 24/. These methodologies broadened their horizons. During the same years they turned to the field as their laboratory, thereby deepening their penetration. In 1923 a dozen enthusiasts began to devote a long weekend each year to some aspect of geography observable in the field, not omitting techniques for studying it. Limitation of time and place resulted in an unintentional accent on localities (microgeography). The participants and their advanced students quickly disseminated the fruits of the conferences throughout the academic world. Thus the study of small areas was widely adopted along with newly invented field techniques.

The interplay between ideas freshly imported from Europe and applications in the field fused in discussions of overall aspects of regional study, especially definition and presentation. By 1930 American students had begun to move in an orbit of their own, although they remained cognizant of European advances, such as the summary of classifications of regions by a committee of the (British) Geographical Association /25/. At about the same time, through statements by Vance and others /26/, it became evident that the kind of work done by geographers and by ecologists in the natural sciences chimed with objectives of students of social sciences, both academicians and regional planners.

The width of the lens focused on the nature of the region is measured by the contributors to four symposia published during the first half of the 1930's. Three were reports of conferences: a conference on regional phenomena held by the Division of Anthropology and Psychology, National Research Council and the Social Science Research Council,

in 1930 /27/; and two sessions of the Association of American Geographers, in 1933 and 1934 /28; 29/. The fourth symposium was the work of the National Resources Committee /30:138-154/.

These joint inquiries and exchanges of opinion as to the scope and treatment of regions were paralleled by publications that trace the maturing of thinking on the subject of regions. Statements by thirty geographers, collected in 1930 and 1932 by Parkins, are paraphrased as twelve views of "geography in America, its content, its philosophy". /31/. Only two of those views are indubitably regional, although two others combine the region with interrelationships between man and his natural environment. Bowman surveyed the status of several aspects of regions in one of seven chapters dealing with geography in relation to the social sciences. /32:144-199/. His topics included field techniques, European schools of thought, change with the passage of time, and at greater length, classifications of regions and relations between natural and cultural phenomena within a region. Colby traced the history of American geographic science without giving a separate heading to regional geography. Instead, he strongly advanced "the vital quality of the regional idea," as permeating the thought of American geographers, whatever their specialties /33/. Finch, after noting that reaction had set in against the method of regional geography as the study of chorology, argued the case for that kind of region and regional study /34/.

The reaction alluded to by Finch was an attack on the validity of the systematic description of regions, and especially micro-regions, a spark that touched off a vigorous controversy and eventuated in Hartshorne's historical and philosophical, book-length treatise, where the underlying

discussion may be followed in two chapters and a major section of a third and in citations /1:250-365; 436-486, 220-224; 13/.

### Collateral Antecedents

Cross currents have also ruffled the stream of regional thought as it has received the discharge of political concepts associated with regional autonomy within the sovereign state. Their volume and velocity vary with national attitudes. /35:245-249, 260, 273-295/. In the United States, streams from two sources have mingled. From the beginnings of American history, areas with marked regional distinction have been known as sections. The inhabitants of a section develop group solidarity in which a salient element is regional consciousness. The give-and-take between sections has always been practical politics in the national government, under the name of "sectionalism," a subject frequently discussed by Turner /36:193-206, 287-314/. More recently, some of the sections have been used as units for overall planning, under the name of regionalism /37:187-193/. So treated, they assume the guise of administrative entities with political potential /35:296-308/, and may appear to oppose the national interest /38:1-16; 39/. Any section used in planning possesses an internal organization derived from the individuality or uniqueness of its occupance, present and past /35:xiii-xiv, 22-104, 309-314/.

The dissonance between regionalism-sectionalism and regional study untrammelled by political trappings may be resolved in two ways. Strident political overtones can be softened by recognition of the mutual dependence of regions on opposite sides of administrative and national boundaries /40; 41:49-50, 57-79/. In Raup's words harmony can be attained by inductive



reasoning from circles of facts, rather than from assumptions of casual . . . relationship among facts" /42:345; 43/.

Within the field of geography, regional study has been paralleled and sometimes challenged by ~~champions~~ of the approach through topics (climate, transport, religions, and the rest). Topical geography lies in the Darwinian tradition, and was pushed to the fore by a century of stress on "scientific" (i.e. natural) elements that form part of any geographic investigation. The kinship between topical geography and the ecological aspects of the natural science is close. For two generations before 1900 physical geography eclipsed human geography, as Hartshorne has shown /1:102-126/, and the resultant blurring of the ecologic and the geographic sense of space is only now being clarified, beginning with an analysis by Ackerman /44/. Of late years ecologic advances in the natural sciences are being imitated by ecologic developments in the social sciences. The method has been discussed by Vance /45/. Only the hairline of viewpoint distinguishes an ecologic study from one in topical geography. But since that difference concerns space, the basic organizing concept of the geographer, it is to him all-important.

The extension of the ecological viewpoint from biological to physical and social sciences has led to the employment of some terms in more than one sense. Chief among these is "human ecology". The term was used orally by both geographers and sociologists for at least a decade before being pinned down in print by exponents of each subject, viz. Barrows /46/ and Park and Burgess /47: ./. As defined by Barrows, human ecology covers the relationship between people and place, "a field cultivated but little" in 1922, when he wrote. Since then a rising interest on the part of sociologists in ecologic aspects of their subject, often called by them "human

ecology", is in contrast restricted almost wholly to associations of people-to-people. They may bring in people-to-place associations, but only sporadically./48:passim/. Some among both geographers and sociologists have hoped that the term might be extended to a "fusion of these two" sets of relations, but they omit or disregard a third set, namely the ecological aspects of the natural sciences (the place-to-place connections), early formulated and long since firmly established.

Reviewing the antecedents of this report, it is apparent that published commentaries on the region, by both geographers and others, have grown out of vigorous oral discussion. From it all a paradox arises: regional geography is clearly a perennial and irrepressible interest of many contemporary geographers, but the utility of regions for geographic study is questioned by a few, who advance the claims of topical geography. Their challenge may voice a reaction to the entrenchment and advance of regional study: unbroken lineage reaching to the Renaissance; innumerable twentieth-century studies in Germany and other European countries; high favor in France, where it constitutes nearly the whole of geography; and ascendancy in the United States for a considerable period after 1920, supported by newly devised field techniques.

#### THE REGION - THEORY AND EXEMPLIFICATION

Philosophy and practice have stamped geography as a dualistic discipline, indeed a subject burdened with two forms of dualism.

#### Dualism and Regional Study

A division constantly made for about a century draws a line between natural and cultural phenomena; in other words, between physical and human

geography. That viewpoint evolved as a phase of the history of natural science. It comes down as an inheritance of the self-conscious period which, in physiography and somewhat in climatology, obscured geography's long tradition as a humanistic subject under the weight of nineteenth-century geology. The physical half of the duality provided a logical frame for those and other ecological disciplines then emerging in sciences having a stake in one or another aspect of the natural environment.

The dual concept was and is also useful to students of human geography. It calls attention to both people and place, and focuses on relationships between them. It provides a convenient frame for the complex of natural conditions basic to the study of areal differentiation and comparison, embraced in the widely used designation "natural environment." Nevertheless it is misleading unless used with caution. No equally acceptable name has been found for the equally basic group of cultural phenomena, an indication that they do not fit comfortably into the frame. In this report, "societal environment" is employed to designate the human half of the duality, although it lacks the sanction of wide usage. The cleavage along the line between nature and culture contains the germ of environmental determinism, i.e. an assumption of natural cause and cultural effect, whether such a genetic relation exists or not. At the same time, it obscures cause-and-effect relations on the same side of the cleavage line.

The humane tradition, reasserting itself in the late nineteenth century, has occasionally gone to the extreme of claiming only the human half of geography, relinquishing physical geography to the several natural sciences. This leaves out the vital elements of the natural environment, except as unassimilated fragments imported from ecological aspects of the

of the natural sciences. A logical but senseless outcome of such a position would abandon human geography to the various social sciences, thus discarding geography as an intellectual discipline. In practice, geographers retain physical geography as natural environment, but not as geophysics. This logic permits retention of human geography as societal environment, but not as sociology.

Dualism of a different sort appears in the custom of drawing a line between topical and regional geography. It began with the classical Greeks, if not earlier. Nowadays, it is always implied and sometimes explicit in the practice of most geographers to divide their time between the two, both in teaching and research. Their twofold pursuit generally takes the form of (1) coverage of the entire earth as to some one feature or related group of features, such as climatology, agricultural geography, political geography; and (2) detailed study of all geographic items within a large area somewhat unified with respect to people-in-places. Such dualistic practice fits a widely adopted prescription formulated by William Morris Davis /49:122-123/.

Simultaneous pursuit of the two aspects of geography proves both their autonomy and their connection. Every area may be analyzed into its topical aspects. Conversely, regional limitation of a topic is a fruitful method in geography, e.g. the fisheries of the Caribbean Region. It restricts the scope of topical study to a workable compass; it concentrates on selected features of a specific area; it invites comparison with the same topic in other areas, and with other topics in the same area. Some assert that all regional geography is topical and all topical geography regional. Even to those who would not go so far, the consonance between topic and region appears to outweigh any conceivable dichotomy between them.

A Monistic Frame for Regional Study

Pondering the history and philosophy of regional study in geography led the Committee to undertake a fresh inquiry into the nature of regions. This was inevitable, because in the entire body of publications on the region no comprehensive analysis of its elements was discovered, either as a phenomenon of space or as a device for studying space. The omission is understandable in the work done in North America, where regional investigation has been pragmatic. The prime object in view there has been presentation of particular regions, a natural tendency in a world and continent where thousands of regional units challenge inquiry and interpretation. The studies produced have treated different categories and levels of regions with little or no thought of their relation to each other.

Search for a frame to support a comprehensive analysis resulted in the view that geography may properly be considered as a monistic discipline studied by two approaches, rather than a dualistic study falling into two discrete parts /44:134, par. 6/.

The key to a workable monistic frame of reference for regional study was discovered in formulating the characteristics whereby areas are differentiated and regions recognized (infra, 18). The prime factors pertaining to regional study marshalled themselves in this check-list. Regions, when tested by these indices, were seen to range in one comprehensive series from single features to ultimate associations of features.

At the same time, some of the most vexatious problems disappeared. Nomenclature on which divergence of opinion was sharp proved to be no longer necessary: among them, kinetic and dynamic; generic versus specific; analytical versus remedial; natural regions versus total cultural regions.

Formulations championed by some and rejected by others ceased to awaken contention and assumed their rightful places. Such is the case with categories of regions and regional consciousness (infra, 21).

### Regional Study as a Tool

The rest of the chapter undertakes to distinguish the elements of the region as they appear from the consensus of geographic studies by Americans, and to mark out the frontiers of American thought concerning regional study.

In geography a region is a segment or portion of the earth-surface, selected by the application of stated criteria, and marked by some degree of unity. In other words, the region is a tool or device for segregating areal features from the sum-total of areal phenomena, in order to clarify, through selected and piecemeal study, the intricate maze of features existing in any part of the earth. It follows that the region is not an objective entity, but a subjective quotient resulting from the division of the total areal content into fragments comprehensible to the human mind.

The unifying elements of a region so selected may be described, and this is usually the initial step toward understanding it. Study of the region continues by arranging its content into a system that distributes its internal phenomena in a meaningful order. The connections between the region and its neighbors can then be ascertained, with a view to establishing its external or spatial relationships. Together, internal arrangement and external relation constitute the order of earth-space, an order that results from processes inherent in the differentiation and similarity of segments of the earth-surface /50:355/. Once the processes of regional or space order are discovered, regional geography builds them into a theory of space order.

Regions that embody trends may be studied, like any other sort. A clearcut example is the differentiation of areas where population is increasing from areas where population is decreasing. The distinction may be refined beyond the plus-and-minus quantities by naming amounts, either as percentages or change or as change between numerical limits.

In selecting, describing, and ordering the elements belonging to any one kind of region, other elements found in the same area but belonging to some other kind of region are disregarded. By this means the regional character under observation is abstracted from the complex actuality present in the area being studied. Because elements of different kinds of regions are present in every area, no area can satisfactorily be cited in illustration of any one kind of region. Examples are therefore eschewed.

Regional study has practical advantages. By dividing the immense and complex earth into segments, the nature of each can be comprehended. By aggregating segments of the earth into regions at higher levels, light from below is thrown upon them. By recognizing the differences between segments, the coherence and distinctive character of each is seen. In comparing regions, some are found to fall into groups having marked similarities, thus further outlining the pattern of space order. Seeing and understanding that pattern contributes to all aspects of ecology and to history, interests the layman, and furnishes a tool for solving problems in which space figures importantly.

Causes of diversity and similarity may be ascertained in passing, but genetic presentation of regional phenomena is not incumbent upon the student of regional geography, beyond the generalization regarding earth-space implicit in setting up the region or regions. Discovery and validation

of abstract principles may be a by-product, but thus far they are confined largely to narrow ranges of phenomena.

Areal diversity and similarity are effectively and concisely expressed in maps, which are always essential to a regional exposition. Maps tend to overstress differences and to minimize similarities, especially when they portray single features only. Construction of maps with this in mind can avoid stress on fractioning at the expense of totalization.

### THE CORPUS REGIONIS

Elements that make up regional studies in geography have been mentioned or implied in some of the technical discussions already referred to. No overall statement as to what they are has been found however, nor any analysis of their character, function, and relations to one another. Names for them have never been formally agreed upon and some go by more than one appellation.

Six elements of the corpus regionis have been recognized. They are presented as the heart of this chapter.

### Criteria

Every regional segment of earth-space is defined by announced criteria that embody the purpose in mind. Criteria may be devised to sort out any type of areal units, as widely different as climates and planned spaces for urban expansion.

The purpose may be particular and stated, such as a land survey of territory being opened to farming settlement. Or the purpose may be implied, as in selecting temperature regions by reference to seasonal variations critical for the rate of plant growth or for human sensibility. Often the purpose is general: to analyze the elements that contribute to a familiar areal variety of landscapes, e.g. plant associations, agricultural regions.



In geography, criteria are sometimes adduced for the purpose of uncovering the pattern of specified natural and societal features in their mutual association, e.g. climate and malaria. Such a combination, in its most inclusive expression, ideally embraces all the items pertinent to human occupancy of area. The purpose of such a comprehensive combination is to differentiate regions of the most complex kind that can be defined and described in practice.

Standardized criteria may be set up for differentiating regions without giving consideration to the qualities or elements of the area involved. The designated purpose is paramount, be it to state in round numbers levels of intensity, or to set up convenient units of administration. Regions so marked out generally are used as tools for research or for administration. In contrast, most kinds of regions are defined and delimited by criteria that take account of the inherent features. A list may be drawn up to initiate the study, but is modified as the region under scrutiny is seen to require additions to the prearranged list, and as some of the initial criteria prove inapplicable. For instance, in low-latitude Africa native animal life and medical and sanitary services rank higher in regional differentiation than they do in Europe, whereas factories rank lower. Application of pertinent criteria produces a pattern of regions having distinctive character. The similarities that are relevant to the kind of region sought receive their due, e.g. temperature ranges distinguished by the physical state of water, or linguistic differences distinguished by dialects. Conversely, the differences that are irrelevant do not appear.

Consider, for example, the problem of defining significant categories of such a single feature as a slope. Slope categories are defined in terms

of their relevance, let us say, to forms of agricultural use. In certain studies in the Middle West it was found that soil erosion in plowed fields became important at about  $3^{\circ}$  of slope. The first category, therefore, was defined as  $0 - 3^{\circ}$ . It was further observed that farm machinery could be utilized up to about  $8^{\circ}$ ; and so the second category was defined as  $3^{\circ} - 8^{\circ}$ . These same definitions of slope category have sometimes been used uncritically in other areas where the significant ranges are somewhat different. In Brazil, where the hoe is the common farm implement,  $35^{\circ}$  becomes of critical importance; and there are places where erosion becomes important at only  $2^{\circ}$ , or at as much as  $5^{\circ}$ . The categories, therefore, are defined in terms of the purpose for which they are to be used; and the variations of slope which are irrelevant (such as  $10^{\circ} - 20^{\circ}$ ) are disregarded.

Inside an areal unit set apart by any framework of criteria, variations relevant to these criteria exist. There may be minor variety in associated features, such as soil differences on a cornfield. Regions carved out of a continuum always include a range of intensities specified by the criteria. The variations may be slight or great. In extreme cases a particular difference between two widely removed parts of a region may be greater than between places close together but separated by a regional boundary. Unless such a difference is negligible it casts doubt on the fitness of the criteria being used.

The criteria selected may range from approximations to precise measures, irrespective of the scale. The instruments employed are stated or implied in the criteria selected; e.g. weather records for climates, traffic counts and studies of terrain for cities. Statement of the criteria not only defines the kinds of phenomena to be brought within

purview, but also the scale (degree of generalization) of the study. This may be in relative terms, such as subcontinental, local; or it may be in quantitative terms, expressed in map scale, in range between limits, or in selected measurements. The scale, in turn, sets limits to the kinds of criteria that can prove useful, and to the exactness of the resultant regional differentiation. The smaller the scale, the greater the generalization.

In the past, criteria pertaining to one sort of region have sometimes been used to differentiate regions of another sort. A common example is the introduction of climatic data as a basis for segregating agricultural regions. Such a confusion in analysis destroys the validity of the regional differentiation.

#### Categories

The method of analyzing areal differences and comparing areal similarities fits a frame of study widely used in non-laboratory subjects; viz. the sorting and grouping of data, according to specified criteria. In regional study the data are portions of earth-space, including their content. The regional pattern that results is ideally the product of mechanical sorting of the data, with the minimum of value judgments. It consists of regions of large or small size, each fixed in space and therefore not subject to rearrangement. The individual units, being determined by selected criteria, range from delineations of single features to areas embracing the entire content of human occupancy of area. More than fifty classes have been recognized running through all the aspects of the natural environment and the societal environment, and including every purpose to which regions can be put.

Single, multiple, and "total" regions

All the classes or regions can be usefully grouped into categories, as follows:

1. Units differentiated in respect to a single feature (which may be viewed as an individual member of the regional association).

Examples: temperature, wheat acreage, newspaper circulation.

2. Units differentiated in respect to combinations of features but omitting one or many elements of the content of earth-space.

Suitable combinations of features exhibit kinship, and so may be looked upon as family groups among regional associations. They fall into three sub-groups:

a. Intimately associated features, generally recognized in a dictionary name. Examples: climate, agriculture, trade. These may be thought of as families.

b. Combinations less intimately associated (comparable to clans) and lacking common-noun recognition, but useful as tools of study. Examples: physical unity (physiognomy), economy, communication.

c. A grouping entailed in the logic of a dualistic approach, but not widely adopted by students of regional differentiation: namely, natural regions and total cultural regions.

3. Units differentiated in respect to the entire content of human occupancy of area. A regional association of interrelated natural and cultural features, weighted without prejudice for or against either, brings into view a community made up of members of different regional

families and clans.

The distinction between the three primary categories named takes form in regional patterns of individual features, families of features, and communities of features respectively.

This view sweeps aside a troublesome concept in the history of geography, viz. a supposed obligation to sort regionally the entire content of earth-space. In an effort to present that unlimited concept several names have been used, among them "study of wholes," "totality," "full geographic region," "geographic region."

No term has proved acceptable to any large number of geographers, a disability that may well point out two dangers in the concept: (1) few imagine that they can literally encompass the entire content of earth-space in a regional setting; (2) such an ambitious goal would surely take the student beyond the farthest bounds of geography.

To find a term without burden of other connotations, and to avoid misunderstanding arising from words now in use, it is here proposed to adopt for the category of regions differentiated as to human occupancy of area the term "compage".<sup>#</sup>

#### Uniform and nodal regions

No matter what criteria are invoked, all categories of geographic

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# Compage (kõm-pāj(e)'), singular noun. Used 1550-1694; now obsolete. An adaptation from the Latin compages, a joining together, structure; from com-, together, plus pag-, root of pangere, to fasten or fix.

Compages (kõm-pājiz, or kom-pājiz), both singular and plural. Used since 1638. A system or structure of many parts united (Webster). A whole formed by the compaction or juncture of parts; a framework or system of conjoined parts; a complex structure; a solid or firm structure (Oxford).

(It is recommended that compage be used in the singular, and compages in the plural only.)

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regions can be grouped under two heads, uniform and nodal.

A uniform region is an area similar throughout in respect to the criteria whereby it is differentiated from adjacent areas; e.g. a rainfall region, a surface configuration, a residential neighborhood. Its internal homogeneity refers primarily to the association of features that distinguish it. The intensity of expression may vary from part to part, and minor individual features need not be identical at every point. Some or all of its elements may be in motion. It may be set apart by dissimilar neighbors and outlined by a discontinuity. Or it may be part of a continuum extending beyond its borders and bounded by the merging of its intensities with those above and below the levels specified by the criteria. In either case the core of each region is separate from the core of any other region of the same category.

A nodal region is a unit defined by an internal structure or organization, comprising a focus (or foci) and a surrounding area tied to the focus by lines of communication or transport. Other nodal regions of like character may lie adjacent to it, or it may be surrounded by nodal regions of different character. Internally it is marked by diversity of function that goes far beyond differences in intensity or minor variation. Circulation (in the broadest sense) is a prime element in its makeup. Hence it is bounded by the disappearance of differential weakening of the tie to its own focus in favor of some other focus. Its boundary lines run athwart the lines that tie it together /51: /.

Each category of regions has its own classification of subdivisions. Thus, an order widely used for landforms begins with continents and continues with major divisions, provinces, and sections /16/; an order for compages is proposed elsewhere in this report (infra, 41).

Characteristics

Once criteria have been set up for defining regions, whatever the category, the regional pattern is disclosed by applying the criteria to facts concerning the area obtained by observation and inquiry. The task is to discover existing associations of features, and to generalize them in order to illuminate the associations and to eliminate distracting details.

To test the soundness of the criteria chosen, it is useful to check the areal pattern against certain norms that serve as telltales of regional validity. Some of them are almost too obvious and basic to require statement; others are not widely utilized, perhaps because they are not clearly recognized. For the sake of completeness a checklist of all the characteristics that serve the regional geographer is given here.

Several characteristics pertain to both uniform and nodal categories of regions. Hence every region differentiated can properly be checked against those items.

A 1. The region is unique, in that every one differs in location from all others of the same category.

A 2. It enfolds a three-dimensional quantity of earth-space. Length and breadth are nearly always measured on the earth's surface, the area of prime geographic significance. Most regional patterns are mapped as of the surface. Most life is carried on there. The third dimension extends to an indeterminate distance above and below the earth-surface. It can be mapped in cross-section as primarily the thin water envelope that limits perennial human life. This hydrosphere, including water-vapor and ice, lies between the lithosphere and the atmosphere, and interpenetrates both. Secondarily the third dimension

extends to the limit of man's operating zones above and below the hydrosphere, e.g. oil wells and stratoplanes.

A 3. It reaches back through time - historical, archeological, and geological - for contributions to its present character. Changes in physical, biotic, and cultural features rarely occur without leaving traces significant for the study of succeeding regions. Thus, Roman roads and Roman law are imprinted on the landscape of Western Europe. The pace and velocity of change may also need to be taken into account, as well as the mere persistence of the evidence of change. The present is merely the latest moment available for observation. Undetermined future change needs to be kept in mind.

A 4. It is described in terms of traits inherent in the category, not by traits that pertain to other categories of regions. The inherent traits are found through analysis of the category. By means of such separate analyses, different kinds of regions are kept distinct from each other, even where they occupy the same, or nearly the same area, e.g. Mediterranean climate and Mediterranean agriculture. A degree of correspondence in area between regions belonging to different categories may occur; sometimes it amounts to coincidence. Examples are climate and natural vegetation, soil and crop. This correspondence may be accidental, or it may betoken some elements of cause and effect, often in association with still other features. To attribute the traits of any one category of region to any other often leads to confusion, if not also to false conclusions. This is most likely to happen when they coincide in area. Nevertheless, coincidence or marked correspondence of one distribution with another implies repeated cases of association,



and therefore a presumption of cause and effect. It is field evidence from nature's workshop, and as valid as repeated laboratory experiments.

A working modification of the foregoing rule may be invoked when data covering inherent traits are lacking or insufficient. Tentative regional units can sometimes be deduced from related known aspects of the regional geography. Such inferred areal differentiation should be presented as a preliminary hypothesis, accompanied always by a warning to the reader.

A 5. It occupies a fixed position in a hierarchy of subdivision and aggregation. No region can belong to more than one level. Within each one, its subdivisions must be smaller than itself; other than that, level of subdivision-aggregation has no connotation of size. Hereafter, the two faces of regional structure, aggregation and subdivision, are expressed as a compound word, in order to keep in view these two equally useful approaches to regional construction. Every category of region, from single features to compages, has its own levels of subdivision-aggregation, couched in terms appropriate to the regional character. Levels that have been formulated for strictly ecological ends cannot safely be adopted for geographic study without testing the fitness of their elements. For instance, the geographic study of landforms appears to have been retarded by an assumption that features and levels suited to geomorphic study could be taken over without scrutiny.

Above and beneath the gamut of regional aggregation or subdivision, stand spatial elements that lie outside the definition of regions. When considered as a globe (terrestrial unity), the earth is unique and undivided. Hence it is not a differentiated areal unit, nor has

it any similar counterpart. At the other end of every hierarchy are the ingredients or building blocks that make up the lowest level of region. Such are the weather observations used to formulate climatic regions, the fields and wastelands that form the basis of agricultural regions, the residences and businesses that make up an urban neighborhood.

A uniform region needs to be checked for two distinctive characteristics in addition to those applicable to uniform and nodal regions alike.

B 1.. It is homogeneous in terms of the criteria that differentiate it. Every level of any uniform category is a generalization of the actual items found therein. As a corollary, high-level regions have fewer elements in common than those lower in the hierarchy. At a given level, maximum integrity is attained with the fewest criteria.

B 2. It is structureless, but need not be featureless, because it may have texture (grain), e.g. the crests and troughs of a folded mountain region, or the checkering of crops and fallow in a region of extensive wheat growing.

While the uniform region has two characteristics of its own, the nodal region has no less than four, in addition to those applicable to all regions.

C 1. Each such region has an internal structure which takes the form of a discernible pattern. The regional differentiation is made in terms of the total structural pattern, rather than the spread of dominant elements over the area.

C 2. It contains a focus (occasionally more than one), that serve as nodes of organization. They are likely to be centers of communication, and are most often urban. The focus may appear to lie outside the

region in exceptional cases, but it must be closely connected by one or more lines of communication, e.g. Oporto for the upriver Port Wine District. The same place may serve as the focus for two or more regions. These may be different levels of a single category, as where a city is a county seat and a State capital, both functions being administrative. Or they may belong to different categories, whether at the same or different levels, e.g. Salt Lake City is a State capital, the headquarters of the Mormon area, and the transport center of the Great Basin.

C 3. The focus of a nodal region is linked to the remainder of the region with ties of different intensities. Commonly the focus lies within a core area, beyond which lies a marginal area. Distance in itself tends to weaken the ties to the focus, as the perimeter of the region is approached. In almost every area, local conditions modify the effect of distance, and so contort the ideal concentric pattern. Terrain is a common case; a language boundary is another. Besides varying intensities, and often more significant, are differences of character within a region, e.g. areas of commuting, of other rail service, and of no rail service.

C 4. It is subject to a flow of material items or communication between its parts, in most cases to both. This flow may be the expression of mobility of movement only, i.e. exchange of goods or ideas. In some instances, it may involve force, as in government exercised from a focal political capital. Lines of force in this sense should be clearly distinguished from mere movement or lines of flow. The flow need not be equal in different directions; indeed, it rarely is. Its reach may vary, as when the focus is at one side of its region. Its intensity may vary, as in the volume of trade with a desert compared to that of an equidistant urbanized district.

Cores and Boundaries

By definition, regions are differentiated segments of earth-space. When portrayed on a map the several segments must be separated, either by lines or by zones. Regional peripheries are likely to be troublesome in some degree, because they are transitional and at the same time critical. Geographers' attention has perennially been drawn to boundaries, because of the need for regional demarcation in a discipline that centers on variety of associated phenomena in earth-space. Preoccupation with peripheries has diverted emphasis from the more clearcut cores, the portions of regions that most closely fit the criteria and display with least question the characteristics of the category.

## Cores of regions

Regions are commonly selected and described by exposition of their cores. The typical characteristics of a region usually find their most intense expression and their clearest manifestation in its core. Hence the characteristics of the core can be used as the tests for allocating the entire region.

In the uniform categories the cores come closest to the ideal expression of the criteria whereby the regions are selected. Where such regions differ in kind, their cores are the parts that unquestionably fit the specified criteria as in the following examples from different categories. In a language region, the core is the area of a sole mother tongue. The cores of agricultural regions are homogeneous in crops, methods, disposal, return, and facilities. Cores of physical regions incorporate climate, landforms, water, and soil; economies comprise maximum (or alternatively minimum) production. The cores of uniform regions carved out of a

continuum, and hence differing in degree rather than in kind, may be thought of as the areas close to the median of the criteria, e.g. in a region of 10-20 inches annual rainfall, the area near the 15-inch isohyet.

In the nodal categories, the core is the most representative portion of the entire area and the part most closely tied to the focus. For example, in a region of newspaper circulation, the area approaching complete coverage; in a compage, the area where fewest deviations from the criteria occur. It should be noted that the core and the focus are not synonymous, even though the focus ordinarily lies within the core. The focus is one salient feature of the region's structure; the core is the epitome of the region's character.

Within any category, an occasional region may have so little internal variety that the core embraces the whole of it, but more commonly the periphery is transitional, partaking of the character of two or more cores. It follows that comparison of different cores produces a sharper areal distinction between regions than can be found in the fuzzy interpenetration of peripheral areas. Hence, rough delimitation of cores is commonly the easiest and surest way to undertake areal differentiation and comparison.

To summarize, the core possesses three qualities which may be blurred in the peripheral zone: in absolute terms, it exists as a recognizable and coherent segment of space, defined by the criteria of its selection; in a relative sense, it differs noticeably from neighboring core area; in comparisons, it sharply displays the similarities as well as the differences.

#### Boundaries between regions

After the core phenomena are thoroughly understood, it is relatively easy to recognize telling characteristics in the borderlands, by means of

which they can be allocated to their respective regions.

Boundaries established by law or used for administration or convenience are expressed as lines, and their location is unquestionable. Such are political boundaries and the limits of delivery districts and decreed planning units. Very few other kinds of boundaries are linear, in the strict definition of that term. Where sharp discontinuities occur the transition may be so abrupt as to approximate a line, not difficult to locate in the field and tangibly expressive of the discrete regions they differentiate. Examples in nature include a fault line and the edge of an ore body along an unconformity; a strand (especially an ocean coast) may be so narrow and clearly marked a zone as to function as a line. Other linear boundaries are the product of human occupancy, either through the creation of a region culturally distinct from its natural surroundings, such as the line between desert and irrigated plowland, or through contrasts in land use, e.g. a slum alongside a railroad yard.

Most boundaries are transition zones varying from a few feet to many miles in width. Soils areas may be separated by an abrupt discontinuity, although more commonly they are parted by a few feet of intermixture. Blighted and redeveloped areas in a city are often separated by only the breadth of a street. Forest and grassland usually merge in a zone that may be miles wide, as do different farming types. City and country are set apart by a zone of interfingering features. Whatever the breadth and character of transitional zones, they separate regions that differ in kind. To convert the less abrupt transitions into linear boundaries for cartographic convenience may require somewhat arbitrary decisions. No harm is done so long as the lines are understood to be substitutions for actual zones.

A very different class of regional boundaries is drawn through an area which is in fact a continuum, with gradual variation from one part to another and no difference in kind. Thus temperatures and rainfall grade from maximum to minimum; on slopes intervening space must be traversed, although on a cliff face it may be vertical distance. Transitions are also common in regions of societal environment, such as the diminution of population on the outskirts of cities. Where regions are delimited by isopleths plotted on a uniform scale, a boundary is in fact a line struck athwart a continuum. The difference marked by the boundary is one of degree, although for the purpose in hand it is treated as a difference in kind. Boundaries so contrived are zones, their widths being determined by the steepness of the gradient. The isopleth chosen as the regional boundary marks no discontinuity, but rather the direction of greatest variation (which lies at right angles to it). The quantitative character of isopleths as computed lines on a map does not confer special validity upon them, because the criteria for determining them are subjectively selected in the first place.

In all kinds of zonal boundaries the transition between two regions may be so broad that it can alternatively be set up as a separate region, but only at the lower level of subdivision.

In spite of wide variation in the breadth of boundary zones, it frequently happens that boundaries between several categories of regions in a given area may run roughly parallel and even coincide in part. If several fall within limits narrow when compared to adjacent regional cores, they may form a "boundary girdle", whether the lines mark zonal or linear separations. The utility of a boundary girdle depends on the significance of the several regional categories represented. Mere piling of lines does not prove the

existence of a vital regional division, but it does predispose the existence of a distinction based on interrelated elements.

Demarcation of boundaries may give trouble in practice, but the proper location follows rules that are simple in abstract statement. In uniform regions the boundary is drawn where the distinctive characteristics of adjacent core areas are least discernible or fade into each other. Such a line may express a statistical median. In nodal regions the boundary is drawn where attraction to the adjacent foci is equal. If there were no overlap, this pull would be zero.

Fluctuation of a boundary (as with seasons or market prices) creates a zone wherever long-term averages are used for demarcation.

In determining the boundaries of any region having multiple features, it is helpful to study the regional pattern of each of the elemental features that contribute to its character. The degree of areal correspondence is thus made a device for testing and checking the boundaries of the regions under study. For instance, a climatic study profits from maps of temperature, moisture, and air currents; and agricultural study benefits from maps of climate, landform, soils, land holdings, and crops.

Quite apart from the quality of a boundary as linear or zonal, and independent of its demarcation, is the geometry of its depiction on a map. If the map-scale used is very small, the width of a pen line may spread a linear boundary over more than its fair share of space, or occupy the whole breadth of a zonal boundary. A zonal boundary of a single feature comes closest to exact map representation at the scale which permits the pen line to coincide with the zone. A boundary representing correspondence of more than one feature is precise only where the separate lines coincide.



Elsewhere, decrease in scale improves the apparent correspondence, e.g. the outlines of soils and fields seem to correspond more closely on a small scale than on a large one.

The scale selected determines the operational limits of the criteria whereby regions are recognized. For instance it is futile to set up criteria that distinguish kinds of businesses, if the map used is a city plan too small in scale to show them as separate entities. Stated positively and abstractly, the scale should be chosen to portray to maximum advantage whatever the map is intended to differentiate.

#### Change in regional cores and boundaries

All regions are impermanent, through the implacable alterations wrought by time. Both cores and boundaries may be modified in this process without restatement of criteria. Change, as a function of the time sequence, is not to be confused with the regrouping of areas for a purpose different from the original allocation. The latter is a shift on the part of the student from one to another regional category, and does entail a restatement of criteria. The lapse of time required for change differs from category to category of regions, ranging from geological eras to a moment of military conquest.

Change may be confined to internal rearrangements of a region, and so leave the overall map pattern of regions unaltered. It may require reconstitution of one or more regions, and so alter the regional pattern. New patterns can result from fission, i.e. setting up two or more units in place of one, at the same level of subdivision-aggregation; or from the reverse process - coalescence of neighboring regions.

Change may take place in either the core or the periphery. It is

likely to be observed in marginal areas, perhaps because properly constituted cores are highly cohesive, perhaps because transition zones may have been erroneously allocated, perhaps because regions are least stable on their margins, perhaps because the frame of reference places them in an aberrant position. Peripheral areas may be detached from one core and appended to another, or they may be set up as individual regions at the same level of subdivision-aggregation as the core from which they are subtracted. Most changes involve shifts in boundaries.

Change and possibilities of change have special significance for the practitioner, including the regional planner. Both the actuality and the prospect of change stress the unfixed character of regions in general, and point out the unstable elements in any region under study. Thus are disclosed the lines of least resistance to altering the status of the region.

#### Compages

Of the three major categories of regions (supra, 21), those delineated by criteria isolating single and multiple features are investigated and presented in much the same way by geographers and others. They are universally recognized as segments of earth-space produced by subjecting the characteristics of an area to scrutiny according to criteria set up for a specific, stated purpose.

The category of more inclusive regions, in contrast, gives rise to differences of opinion and perhaps also of practice that the committee has been unable to resolve.

Among students of inclusive regions at large, an overwhelming proportion take for granted the totality of the content of earth-space,

and attempt no analysis of methods for handling it. No evidence has been found to indicate that regionalists working as historians, anthropologists, and sociologists have ever questioned the given (i.e. objective) nature of regions as segments of spatial totality. As a case in point, four of the fifteen chapters in the 1951 symposium Regionalism in America /4/ are restricted by title to single features; the authors of all the others appear to assume regional totality except where they specify otherwise. A good many workers in geography likewise postulate an inclusive regional entity, undefined but assumed to approach totality of the combined natural and societal content. Such is the meaning most commonly attached to the word "region" when it is used without qualification.

Acceptance of "given" inclusiveness is incompatible with the view, widely held by geographers, that the region is a subjective device for segregating areal features. In geographic study, it appears to be sound practice to restrict the inclusiveness to the community of features that depict the human occupancy of area. Hence the proposal to adopt the obsolete term "compage" for this type of region. The compage is by definition something less than regional totality; its limitation to human occupancy of area should suffice to keep the geographic student within the bounds of his competence.

A few geographers would study compages by means of criteria set up prior to making field observations. The resultant regional differentiation may approach the total content of areal occupancy, but only if the fore-ordained criteria happen to cover all the pertinent features of the particular area. Otherwise, the regional pattern would appear to be made up of multiple-feature regions, rather than compages.

A view more widely held requires consideration of the kind of compage being investigated. The criteria then chosen for framing the study need not comprise the entire gamut of natural and societal features. Rather they are those applicable to that particular compage, arranged in the order of their significance to it. In one case the list of criteria may begin with mining and minerals; in another case, neither will figure; in a third, mining and minerals may appear on the list, but far below agriculture-soils-climate. Once the applicable criteria have been ascertained, they are used to discover the distinguishing characteristics of the compage being investigated. In this approach to the study, no standard list of criteria is adopted as universally suitable for differentiating compages.

Possibly further testing of methods for ascertaining and expounding compages will resolve the apparent incompatibility between the two modes of operation stated above. An orderly procedure adopted by some investigators begins with making maps of each element in the compage, in order to compare the map patterns for correspondences and coincidences, and from them to adduce the compage. A procedure more widely followed begins with a tentative assumption of what and where the compage is, and continues with testing the hypothecated compage by making studies of its elements, either singly or in groups.

A different practical question, also as yet unanswered, arises from the complexity of compages, and the consequent breadth of background needed by the student as well as the considerable amount of time required for making a study. Some geographers urge that compages can best be attacked cooperatively. They base their argument on the ground that no single student is likely to have either the time or the training to gather and interpret

all the needed data, unless possibly in the smallest and least intricate of compages, viz. the locality.

A very large proportion of all geographers have interested themselves in regional study of compages or areas akin to compages. It may therefore not be claiming too much to assert that such study comes close to the eternal function of geography. It draws upon the ecological segment of every related subject, in both natural and social science. In turn, it may be serviceable to related disciplines. Thus, social scientists may use compages to illuminate their own work, and sometimes as a foundation for it. Because of its position as the keystone of the geographic arch, the compage is here singled out for treatment at greater length than the other categories of regions.

Like all regions, each compage is uniquely located; it also embraces a combination of elements found nowhere else. Strictly construed, it therefore has no counterparts. This has baffled some students who desire to make regional comparisons. Construed more loosely, compages are likely to have so many features in common that they well repay comparison as to their essential character.

Because of its inclusive quality, the compage can be studied successfully only when all applicable criteria are canvassed, whether they are used or not. Perhaps no student is wholly successful in setting up criteria that cover every complexity of the items constituting a compage. Those who try to set up criteria as they proceed, run three risks: some criteria may appear inapplicable to the particular subject, and so are omitted; others may seem to have import so slight they are minimized; still others, perhaps important, escape notice altogether through oversight.

Those who work strictly within a prearranged frame of selected criteria are aware that they omit some aspects of the compage under study. The risk they face is exclusion of so much as to produce multiple-feature regions less than compages, which they may suppose to be the more inclusive category. Whichever the approach, the fateful decisions about criteria must be made in terms of the student's experience. There appears to be no escape from value judgments at that point.

Compages occur at several levels of subdivision-aggregation. The lowest level is found by summing up the ingredients that constitute a locality. It may be rural or urban. In rural areas the locality generally consists of lands and buildings focused on a social center, a village, or a ranchhouse. In urban areas the locality is a neighborhood similarly focused on a center, social or economic. Isolated communities predominantly urban in character, such as mining camps, resemble city rather than country. The locality, besides being small in compass, epitomizes human occupancy of areas in its elementary form. It is more easily investigated than the more complex areas, and presentation of findings exemplifies the compage in terms easily understood.

The locality comprises the daily orbit of the community, where place has maximum reality and meaning for its inhabitants. In studying it, the facts can usually be gathered at first hand, in the field, by one observer, in a single field season. The student is forced to take account of the facts as they exist in their place relations, a reliable test of geographic reality. Study on that level is microgeography, and so parallels recent stress in cognate fields, such as microclimatology and areas of linguistic dialects. By coming to grips with field reality, the student fits himself

to make equally realistic studies of compages at higher levels of aggregation, studies which usually incorporate facts culled from miscellaneous sources requiring transmutation into geography.

The other level of aggregation-subdivision that has become standardized to some extent, is the highest level of reality recognized by all who are familiar with a given area. Such a compage has striking internal variety; nevertheless, its components have built themselves into an entity that lends itself to description, analysis, and interpretation as a unit. It has often been dubbed "major region", although that term is also used by some to name a still higher level of aggregation.

Remaining levels, while frequently exemplified, are handled in such diverse ways that there is no agreement as to their number, their names, or their distinguishing qualities. As this report has evolved, a large number of geographers have reached a consensus that for general use four levels are needed, to which some would add a fifth as the crowning aggregation.

#### A suggested hierarchy for compages

To find a hierarchy so widely acceptable as to lead to its adoption would greatly advance the study of compages. A suitable system should embody the salient differences between the levels, find names for them neutral as between subdivision and aggregation, and suggest ranges of map-scale suited to both investigation and presentation. In the scheme that follows, locative examples are given in the interest of clarity, despite the risk that specialists may consider them inappropriate.

1. The lowest level of compage has been more generally studied, and with more precise measurement, than any other. It has attracted

the attention of most American geographers over a period of thirty years. It is well fixed in American usage. Examples (arbitrarily cited from Asia and Europe) are the market localities Chengtu and Chartres. There is general acceptance of "locality" as the designation for this level of compage, with the proviso that in urban areas "neighborhood" may be a more descriptive term.

Since much of the study of a locality is made in the field, the scale adopted for field maps should permit identification of the smallest areal differences significant in a compage, perhaps only a fraction of a hectare. A scale not smaller than 1:20,000 is suitable. Presentation should include maps at scales not smaller than 1:50,000.

2. Localities may be grouped into units, each with a character so distinct that it is accepted as a unit by laymen as well as specialists. As a rule it has a name familiar to those living in it and nearby, and even to a wider circle. Examples, to build upon the localities already named as samples, are the Chengtu Plain and Beauce. "District" is suggested as a suitable name for this level. The word clearly implies an area on the small side and recognizably cohesive in character. The name has often been applied to compages larger than localities, and needs only confinement to this level to make it very useful.

The outstanding quality of a district is its unified nature, usually dominated by a closely associated group of features. The Chengtu Plain is a nearly flat, irrigated rice-land; the Beauce is wheat country, thanks to well drained limestone soil. Districts may be large or small, and this has troubled some geographers. The



consensus, however, favors a single level regardless of size, so long as its unity bears the stamp of a rather narrow association of elements.

The district fits a scale that permits field mapping, although not in great detail. Cartographic techniques of the laboratory are useful to the limit of their inherent error. Areas as small as ten hectares can be mapped in the field and identified on maps used in presentation. Field maps are satisfactory on scales not smaller than 1:62,500 and final presentations on scales not smaller than 1:250,000.

3. Neighboring districts, differing from each other, may be grouped into a complex but harmonious compage characterized by variety within unity. A compage at this level is more likely than not to have a name in common parlance. Many, perhaps most, such areas have been made the subject of geographic study, because they lend themselves to unified analysis and presentation and at the same time cover a large extent of area fraught with considerable complexity. Examples are the Red Basin and the Paris Basin.

A compage at this level may be called a "province." To the extent that non-political proper names are used in designating provinces, there should be no confusion with legal applications of the term to some political areas. Many geographers will note that the province is the level they have been wont to call "major geographic region." Against that usage are impressive arguments: it is no more geographic than other levels of compages, nor than any other category of regions being studied for geographic ends; region, being the generic term, ought not to be preserved in the title of any one of the scores of kinds of regions; major is unnecessary, if a name

without an adjective is adequate. The term province has the further advantage of equating this level of compage with the same level in a generally used hierarchy of geomorphic regions.

The province compels use of a scale too small for detailed field mapping, but large enough to permit cartographic comparisons of boundaries and cores, as well as coarse-grained observations in the field. The smallest area easily identified on maps is about twenty-five square kilometers. Field maps may be on scales down to 1:1,000,000, and presentation should not utilize a scale smaller than 1:5,000,000.

4. Several provinces in any one area may possess enough similarities or mutualities to be profitably treated as a unit for a few purposes. Sometimes a compage at this level has a proper name of its own, but often it is necessary to coin one. Examples are Central-and-South China (or Green China), and Oceanic Europe, to carry on the hierarchy begun with Chengtu and Chartres. Certain generalizations about human occupancy of place apply to each of those large portions of the earth. Statement of those facts makes a frame for subdivision into the less academic levels. The areas named, and the score or so of others that together cover the world, may be given the name "realm", a word having the double connotation of large size and unity in only a few particulars. The blurring of its etymology in political and social usage leaves it in the public domain, if geographers find it suitable.

The realm is so large that it must be plotted on a small scale.

It does not permit geometric analysis of its space in the field, or by other methods. Areas much smaller than 1,000 square kilometers can probably not be identified, and so should not be mapped. Published maps presenting the regional characteristics are on scales of 1:5,000,000 or smaller.

5. Some geographers wish to recognize areas still more inclusive than realms. Those are the units that are often mentioned merely to state general location. East Asia and North Europe are the examples that include the sample areas mentioned above. Because these terms are almost exclusively locative subdivisions of the earth as a whole, "grand division" may be the most suitable name to be found, in spite of its employment of an adjective, and its bias for subdivision and against aggregation.

At any level, the ordinary compage is set apart from its neighbors by its internal texture or organization. One possible exception exists: when two contrasting and adjacent areas are linked in commensal life, they form a single compage of complementary parts, e.g. an oasis and surrounding territory. This case is uncommon, and perhaps it should be regarded as a particular kind of nodal region. Less intimate relations, such as customary trade between nodal regions, whether compages or other categories, do not warrant fusion into a single compage. Two or more areas linked by trade or other traits, may be merged into a single compage at the next level of aggregation, if the criteria permit.

#### Regional consciousness

The regional concept may carry with it an overtone of regional

awareness, a form of group consciousness that derives from a sense of uninterrupted area, whether a piece of land or the opposite coasts of a unifying body of water. A convenient contraction of the phrase "regional consciousness" is regionality. Regionalism, although a word much used, is inadmissible because it is overlaid with special meanings and generally serves non-geographic interests. A recent critique of "regionalism" points out that the word represents not only a state of mind (i.e. regional consciousness), but also a frame for collecting information about areas, a hypothesis to account for the interrelation between areas, a tool of administration and planning, and a cult /4:381-393/.

The most obvious appearance of regionality is in political regions. In sovereign states it is rampant under the name of nationality or patriotism. Within a state, it may be weak or limited to certain phases of life, e.g. in Northern Interior United States. Or it may be strong if the state is made up of sharply differentiated regions, as in Soviet Russia. Internal barriers may heighten and perhaps be responsible for regional awareness, as in Canada. Where a sovereignty is divided along lines that mark sub-nationalities, regionality may quietly persist without rancor, as in the cantons of Switzerland; or it may be invoked as a rallying ground for achieving independence or autonomy, as in Scotland. A feeling of insecurity or inferiority may promote regionality, whereas parts of sovereign states seated firmly in the political saddle are unlikely to feel the need of invoking regional distinctiveness, e.g. the Humid Pampa of Argentina. Constituent members of a sovereign state may join forces to achieve regional advantages, as the three States of southern Brazil have done. Conversely, regionality may provide foundation stones for a super-structure jointly raised, as Benelux.

Regional awareness appears in municipal conurbations, not because they have a legal status different from surrounding countryside, but because they are set apart from it in appearance, they comprise social units with distinct economic functions and common problems of servicing, and they possess both focus and nodal pattern.

In larger regions, self-awareness may be furthered by the leadership of a focal city, e.g. Spokane in the Inland Empire. In rare and disputed cases, two or more foci may simultaneously be centers of a single regional outlook, as San Francisco and Los Angeles in California. Landscapes in the sense of scenery, whether beautiful or not, is a factor in creating regional awareness.

It seems to be the case that the only areas, other than political regions, in which a sense of regionality appears, are compages. If names belonging to other categories of regions have a connotation of regionality, they are being used in a dual sense. The following samples are taken at random from several categories: Locational regions: East End (London), an urban neighborhood or locality. Climatic regions: Thermal Belt of North Carolina, a resort district. Landform regions: Southern Appalachians, a province of distinctive occupance. Soil regions: Black Belt of Alabama, a district having an economic and social character of its own. Vegetation regions: Landes, a French pays at the district level. Crop regions: Bordeaux Wine area, a district set apart by appearance and mode of rural life. Mining regions: the Iron Range northwest of Lake Superior, a collection of isolated localities. Language or religious regions: French Canada, a province sharply differentiated by its way of social life.

From the foregoing it will be observed that all levels of compages

except the grand division may have overtones of regionality. Self-awareness appears reliably in the locality. Where people are in close touch with each other, only a hermit can avoid a sense of community with his neighbors. Its existence in the district stems from a common way of life (as in the pays of France.) On analysis, this appears to grow out of contacts between small groups of people, repeated and varied, and continued long enough to establish a sense of shared existence. It may be accentuated where there is also isolation, either natural or societal. An extreme example is the Wendish (Slavic) settlement in the Spree marshes near Berlin. Provinces have quite generally been differentiated in part by the criterion of regionality. Brazil's Northeast may be cited in point. Some realms have vague suggestions of regionality, but perhaps only where there is a firm connective element, as sea-trade in Oceanic Europe. Grand divisions, being merely locative, can not be expected to display regional consciousness, even though newspapers may seem to attach it to them.

A compage at any level may lack regional consciousness. In such cases, their reality as regions may exist only in the minds of their creators, and not in the hearts of their residents. Thus, West Africa and the Pocahontas Coal Region have utility as geographic tools, but they appear to lack regionality.

Where it does exist, regional consciousness appears to deepen human solidarity within a region, thus contributing to its stability. A region clearly aware of itself is likely to appear to its inhabitants, and to outsiders, to have an independent existence. This psychology is an element of the regional complex. It helps to stamp the area with tangible features, such as distinctive architecture and the tempo of human movement. It is an

expression of innate loyalties that reinforce the external evidences of its regional individuality.

The intensity of attachment to a region varies with individual inhabitants, with character of the region, and with the impact of history. Switzerland and Nebraska will serve as contrasting illustrations of extremes. Likewise, any one person may feel regional attachment to more than one region, say to neighborhood, city, province (as used in this outline), nation.

"Section" is a term with a connotation of regional consciousness. It is widely used in the United States by historians and sociologists, and therefore needs to be understood by geographers who may wish to equate it with "Region." It has been defined as the historical doublet for geographers' region. It has been utilized as an areal fulcrum for political leverage, with the object of achieving autonomy and independence. In both senses it has a political character and is dynamic. As currently used it appears to add nothing but a confusing term to the geographer's study of areal differentiation.

#### The outlook for regional consciousness

Regionality appears to be a present aspect of a good many areas. Where it is coextensive with political units, its boundaries delimit themselves. To assess its weight in the balance with the other features that make up a region is baffling, because it is intangible and therefore not readily measured by instruments familiar to geographers. Yet it cannot be ruled out in the qualitative sense, even though means of measuring its quantitative value in recognizing and interpreting character have not been devised. Regional consciousness occurs more often than not in compages.

This has led some to think of them as analogous to biological creatures; a dangerous habit of mind, because it leads to untenable conclusions.

Whether regionality will continue to hold its place among regional features is doubted by some, presumed by others. It does not always appear when conditions seem favorable, e.g. in the Humid Pampa. Yet it often emerges under conditions apparently similar. It is a conspicuous item in isolated settlements, such as Central Alaska, and may perhaps be associated with pioneering. When an area displays correspondence in several uniform categories, regional awareness is likely to be present or to evolve. An instance is California, where climate, landforms, water supply, agriculture, and cultural heritage, have contributed to regional differentiation out of the socio-political unity of the United States.

Certain trends in contemporary life tend to undermine regionality, particularly in its more bigoted aspect, usually called "provincialism." As primitive peoples improve their technology, the no-man's land between tribes is likely to shrink and it may even disappear. In areas technologically more advanced, increased ease of communication and movement smooths away differences rooted only in tradition, and blurs and widens the peripheral zones between regions. The urge to substitute the mobile individual for the earthbound social group, as the unit of society, loosens or breaks the hold of group-solidarity and weakens regional cohesion. North Americans need to remember that this tendency is farther advanced in their continent than in any other.

In spite of fraying in many places, regional consciousness maintains tenacious hold where it has become firmly established. This is notably true so long as both natural and societal environment combine to provide a



distinguishing set of conditions for a society, e.g. Tehuantepec within Mexico. It may be equally true even though one or more contributing aspects of the natural environment is obliterated. Drainage of marsh barriers and increase in waterborne traffic between Netherlands and Germany, leave the two nationalities still confronting each other along their historical delta-margin boundary. A recognizable pattern of regionality may persist in the face of altered conditions in the societal environment. Today, in the "solid" South, two parties contest local elections, each deriving its strength from the same districts as did their ante-bellum forebears: the map of French party strength has changed little through four republics, two monarchies, and two empires.

On the whole, regional awareness appears to be a concomitant of areal diversity, and promises to persist as an element in regional differentiation. It appears least subject to change where the natural environment is harsh and isolating to an extreme degree, and the societal environment is sharply distinctive. Where conditions of nature or culture are markedly changing, the pattern of regionality may be altered without destroying its essence. New ways of using space and faster communication may result in changes in shape or size, or in disappearance of regions, without obliterating regional consciousness. It may persist as an element in the new pattern of regions, e.g. nationality in conquered states. Or it may transfer from one set of phenomena to another, e.g. a part of New England's regional awareness has shifted from rocky farms to factory cities. Some have assumed that a single political frame for the entire earth would obliterate regionality. This seems unlikely, because as political loyalties come to cover larger areas, governmental policy will have to take account of diversity of pattern in regions of other categories.

## THE METHOD OF REGIONAL STUDY

To pursue an investigation that will reach the goal of regional presentation as formulated in the foregoing pages requires a method. The student will approach his topic knowingly, recognize the attitude with which he faces it, and possess skill in the use of the tools with which he attacks it. His procedure can be here described as a succession of stages, although in practice they tend to merge.

Approaches

The primary objective of making a regional study is to recognize, delimit, and describe a segment of earth-space that is coherent or unified in terms of the criteria adopted for differentiating it. Regional differentiation moves through stages, although not always in the order set down in the following paragraphs.

The analytic and the synthetic approach are equally valid. Analysis begins with the highest-level units that can be distinguished, and works down through the hierarchy of subdivision, until it finally reaches the region that is to be studied. Synthesis begins with the lowest-level units, and builds up through the hierarchy of aggregation until the subject of study is reached. Breakdown and buildup can be used to check each other, thus confirming the authenticity of a chosen region. Which of the two approaches should come first may depend on the level of subdivision-aggregation sought. Initial rapid analysis has the advantage of providing a useful orientation.

Once the region is in view, it becomes the subject of internal examination. This may begin with observation and arrangement of its forms -

those items observable either directly or through compilations. These are fixed and static, e.g. a rock exposure, a schoolhouse. The assemblage of these items produces a regional (map) pattern. To understand the internal coherence of the region and its contacts with neighbors calls for a study, not only of the forms, but also of its functions. These are current and kinetic, e.g. traffic flow, river flood. They can be grasped and presented through analytical description or descriptive exposition. The internal examination is concluded with items in process of critical and assessable change through time, e.g. floodplain, judicial decision. Thus form, function, and sequence are arrayed as the three aspects of regional character.

Standing alone, internal regional examination needs safeguards. Being centered on itself, it can lack the breadth needed for complete understanding. At the micro-level it may turn out endless descriptions, set in no meaningful matrix. At higher levels it may lack balance, stressing the more obvious features at the expense of others less apparent, but no less significant.

Study of similarities and differences between analogous regions is a useful corrective. No two regions are exactly alike, but they may share enough characteristics to make comparisons worthwhile. Single-feature regions lend themselves to the most nearly complete identifications, and compages stand at the opposite end of the gamut of categories, with fewest features that can suitably be compared relative to the total number in their makeup. In any single category, each level can be wisely compared at more points than can higher levels of aggregation.

Comparison of regions is valid only if their categories and their status in the hierarchy is recognized. Within any single category the levels

are self-evident. The region under study may be usefully compared with adjacent regions that constitute the next higher level of aggregation. Or it may be compared with regions at the same level in other parts of the world, e.g. the climate of all the world's low-latitude coastal deserts. The utility of comparisons between regions at different levels is more doubtful, but need not be rejected unless it proves wanting.

When comparing regions belonging to different categories, it is vital to equate the units as to their respective levels of aggregation-subdivision. The current practice of using unrelated sets of names in the several categories makes this difficult and unreliable. As a rule, comparisons between different categories is wanted chiefly within a single general area, as a means of discovering degrees of correspondence between overlapping categories, e.g. the climate, hydrography, soil, lumbering, and agriculture of Fennoscandia. In comparisons of that sort, neither correspondence, nor even coincidence of area, can be taken as proof of causal relationship. Nevertheless the presumption of cause and effect may properly be investigated, and can often be demonstrated. Causal relations may exist between any two or more elements of the regional makeup, regardless of whether they are features of the natural or the societal environment.

In comparative studies, two or more regions may be treated without singling out any one of them or, light may be focused on one particular region by comparing others to it.

#### Attitudes

The general purpose of regional study as the recognition, delimitation, and interpretation of segments of earth-space, permits a considerable range of attitude on the part of the student, as to the immediate objective sought.

All regional geography appears to reach this objective through three modes of operation.

1. Academic study, for the sake of understanding the present state of a region and so much of its past as is relevant. Discovery of generalizations is a usual, but not an inevitable concomitant. Scientific curiosity prompts such a study, and it may be formalized in terms of the elements associated within the region: where A is found, x, y, and z are also present. The conclusions permit or lead to diagnosis, in the sense of scientific determination. The investigation and the presentation of the findings serve to increase knowledge of the earth, for general circulation, for teaching, and for transfer to cognate disciplines.

2. Practical study of the present state of a region, with a view to prospects of impending or current change, and possibilities for alteration. Curiosity regarding the future motivates such a study with an eye to useful applications of the findings. The elements are associated in the region according to the formula: if A is wanted full account must be taken of x, y, and z; change made in A may alter also x, y, and z. The conclusions result in prescription in anticipation of alteration (either prevention or improvement). The findings constitute materials helpful to the engineer and planner in government or business, while substance for students and teachers is a likely by-product. Generalizations may be discovered incidentally.

3. Prejudged study of the present state of a region with the avowed intention of altering it along preconceived lines. Reform is the underlying motive of the study, and commitment to a cause tends to turn the student into an advocate, blind to findings that do not support his

views and unwilling to consider multiple working hypotheses. The elements formulated, run as follows: A ought to be wanted, therefore x, y, and z must be bent to achieve A. The conclusion is bound to be a nostrum, deleterious to all who come in contact with it. Geopolitik is the best-known example of this attitude. Its "generalizations" are unrelated to truth.

### Tools

Whatever the approach or the attitude of the student, the region is investigated and presented with the aid of specific tools.

Basic to all others, is the way of investigation common to all observational disciplines: to observe and inquire, in the field and through compiled data; to record the observations; to interpret the record; to check and amplify the interpretation, in the field and through compiled data; and to draw conclusions justified by the preceding steps in the investigation.

More narrowly applicable to the study of regions are the tools common to the geographic craft - documentary, photographic, cartographic, statistical, and sequential. In their service to geography in general, these are discussed in Chapters CO and OO. Their particular services to regional studies are here briefly noted.

### Documentary

All existing reports on a region written by geographers constitute background documentation of high value. Descriptions of places by travellers, explorers, and students of ecology contribute useful items and may be priceless in default of recorded observations by geographers. They have particular value for remote and little-known regions and they may constitute the

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sole source of information for the past of any region. Fictional descriptions by authors familiar with the scene may convey reality through color or incident, thus supplementing statements more soberly factual. They must be used with extreme caution and for atmosphere only. All written evidence of the sorts mentioned needs to be subjected to the tests of accuracy, reliability, and usefulness.

## Photographic

Photographs, whether taken on the spot by the author, or acquired by other means, sharpen and economize regional description. When suitably captioned they bring out items of regional significance and correlation. Air photographs vividly render a considerable portion of the regional pattern and texture. When keyed to maps by indications of areas covered and by orientation, both obliques from the air and snaps from the ground become adjuncts of the cartographic presentation.

## Cartographic

Maps especially useful in regional study can be presented in a list.

1. A locational map of the regional setting, including all places mentioned is required.
2. The texture of the region should be mapped, including core, peripheral zones, and focus if there is one.
3. Centers other than foci of nodal regions, i.e. median points, or areas of particular phenomena, may be incorporated into maps of texture, or they may be presented as separate centrograms.
4. Boundary belts, lines, and girdles may be part of the

foregoing, or mapped separately.

5. Maps may show a sequence of past stages, as well as contemporary patterns.

6. For nodal regions, internal and external lines of communication between foci need to be mapped.

7. Compages may be illuminated by maps of other pertinent categories of regions. Such maps should be used only if they contribute to understanding the association of people and place.

The scale of maps to be employed is commonly determined by the detail wanted. The suggestions made in connection with compages (supra, p. 41) can be applied to all categories of regions. Items of the landscape are not all equally important to the regional presentation: minor ones may be omitted; in contrast, large-scale insets or separate maps may be required for parts or aspects of the region. Some items, such as roads and pit-mouths may have to be shown by symbols disproportionately large.

Besides maps depicting actuality, regions may be cartographically presented by data arranged in abstract space by means of constructs of "ideal types", i.e. antitypes. The theoretical spacing of market centers is the example most familiar to geographers; others that promise to be useful are cores of crop regions and settlements within a particular culture. An antitype as initially constructed is a hypothesis regarding space. It is tested and refined by comparison with actual regional patterns, noting deviations, by determining the elements common in the deviations, and by incorporating standard deviations, i.e. those that approximate reality. An antitype may be used as a standard for measuring fluctuations over a period of time, e.g. cropland cores plotted with modifications following upon blight or change in



price. An antitype symbolizes a model shaped by underlying forces. The interplay of these forces permits prediction, trustworthy to the degree that the model is correctly perceived and clearly formulated.

### Statistical

Statistical data of many sorts have been compiled by non-geographers. They constitute raw materials, and may require checking in the field. They may profitably be converted into regional maps by use of centrograms /52/ and isopleths, showing single features or ratios /53/.

Statistics may be confined to a particular moment of time, or they may be compiled for successive periods. The latter are particularly valuable in sequence studies, and provide one basis for forecasting trends.

The questionnaire is a device for accumulating statistics according to some formal plan. The data may be quantitative, or they may not.

Sampling is a statistical tool much used in selecting areas for micro-studies, and occasionally employed at higher levels of aggregation-subdivision. A constituent area believed to be representative of its group is chosen as a type of all the regions that together make up a region at the next higher level in the hierarchy. The method fails if the regions presented as types are not in fact typical. To minimize this risk, it is necessary to study variations of the type, including border areas. Sampling decreases in reliability with each rise in level of aggregation.

### Sequence of Change

Sequence exists in all kinds of regions. Examples are process in land-forms and soils, and climax in plant and animal ecology. Sequent occupance is a phase of regions that include human beings and their works. They may be

regions of single features or of multiple features, e.g. crop regions or economic regions. Sequence is especially useful in the study of compages, whether attention is centered on current occupancy or on historical geography.

Safe and successful employment of sequential tools calls for familiarity with tools forged by other disciplines: the written record as handled in history; the evidence of prehistory as given through archeology; the cultural configuration as understood in anthropology; ecological associations in nature (nearly everywhere modified by human interposition); the evolution of soils; the record of the physical earth as manifested on its surface, i.e. geomorphology; climatology, especially as related to prehistory and to the evolution of vegetation, soils, and animals; literature - the sensitive perception and colorful portrayal of regional character by artists in words.

#### Points of Reference

The user of any regional study has a right to expect an explicit statement covering facts needed for his orientation. The reason for making the particular study, as distinct from the purpose and objective of regional study in general, gives the reader a clue as to its probable usefulness to him. The scope of the study, including its scale and the intensity of coverage, indicates the detail to be expected. An estimate of the reliability of data used for different parts of the region aids in critical reading of the report. The criteria chosen as the guide lines for the study need statement in detail. Anyone who finds them unacceptable can still use the findings by making allowances.

The period at which the study was made should be stated, including dates of field investigations and of principal collections of other data. Lacking this information the reader can only assume the date of publication,

which may belie the facts.

Informed by the statements called for above, the user will avoid misunderstanding that might lead to unwarranted criticism.

#### FRONTIERS OF REGIONAL RESEARCH

The frontier of research on the region is the testing ground where postulates that have been advanced are subjected to experimental application. Accepted practice lies somewhat behind that frontier in most sectors. Tracing the frontier zone may serve to point out the present status of regional study, and to indicate sectors in which active advance appears desirable and possible.

#### Regional Elements

The criteria set up for delineating regions are bound to remain fluid, because they lie within the discretion of the student, and may not be challenged, provided they serve their stated purpose. It would be helpful, however, to make available sample sets of criteria usable in differentiating the more commonly studied categories of regions. Such samples might well stress the processes that enter into regional differentiation and comparison, and sort them into physical, biotic, and cultural. Alternatively or in addition, sample regional type-studies made according to clearly formulated criteria would help to clarify the basis and range of regional differentiation.

The comprehension of regional categories within a single series, as embodied in this report, appears not to have been suggested elsewhere. Much remains to be done in determining the really useful categories among the large number that lie between single-feature regions and compages. Hitherto there has been no clear recognition of the distinction between uniform and nodal categories, nor have contrasting names been proposed for them.

Several phrases denoting nodal regions have been long employed by some geographers, but without being widely adopted /e.g. 54:171/.

The groups of data that make up individual categories are in some cases well sorted, in other cases chaotic. Climatic and political regions are among the categories most satisfactorily handled. Whatever the present advancement of any category, refinements are being made in the interest of fidelity to actual conditions. An example from climatic regions is the addition of "effective moisture" to precipitation. Inherent traits are being more and more strictly allocated to their respective categories, superseding the former confounding of traits between two or more categories of regions.

Hierarchies of levels stand at various stages of completion. In some categories a generally accepted system is in common use; in others there is no agreement as to the proper number or character of levels. Specialists on several subjects are testing currently-used levels for their fitness. It would not be amiss to reconsider all categories in the full light of regional study as a whole. Some are known to be intricate to the point of negation, e.g. soils classifications worked out for ecological ends. Others, better suited to the geographer's use, might still profit from reconsideration. It is not yet known whether or not the same number of levels is ideal for the several categories. Names thus far chosen for the levels of different categories are unrelated and in some cases at variance. Unequated levels and unrelated nomenclature make it difficult to compare regions belonging to different categories. An ordered set of terms would not only facilitate comparison, but would also sharpen inter-regional examination. The proposal put forward in this report for compages is an effort to find common ground

on which to erect regional edifices.

Correlation of hierarchical levels with scale is beginning to interest students of regions. Scale in this connection refers not only to map scale, but also to the degree of detail in the description and exposition. Attention to scale may become the means of equating the levels of the several categories. The position of an individual region in relation to the whole family of regions is essential for a clear picture.

A number of the characteristics that serve as brands in the roundup of regional features have been used in regional study, but the whole checklist has not heretofore been set down for reference. Additions to the list or modifications of it will presumably be made, as it is put to the test of wider use.

Boundaries are among the most thoroughly discussed aspects of regions. Without minimizing their importance, the major emphasis may properly be shifted to regional cores, for the sake of focusing on the essence of regional character, rather than on special manifestations of it.

In this report the compage, alone among categories of regions, has been considered in detail, in the hope of bringing study of it to a fresh frontier. Its broad sweep across the whole of geography has left a confusing trail of misunderstanding that urgently needs to be cleared up. The numerous careful studies of compages at the lowest level point out a path to equally painstaking studies at higher levels.

The validity of regional consciousness is much debated. Regardless of the furor, it enters into regional study at a number of points, and refuses to be denied. Analysis of its character, and estimates of its proper place, now stop at a frontier far short of the ideal.

Investigation

A frontier that shifts perennially is the current grasp of modes and means of regional investigation. Advancement rests in part upon new tools forged for topical as well as for regional geography. A recent review article illustrates the rapid evolution in techniques for soils studies /55/.

Regional studies at the micro-level have benefited from sharpened field tools and consequent deepened penetration. Application and adaption of those tools and techniques to higher levels of aggregation-subdivision is needed. Technical differences in handling the several levels of a hierarchy have not been worked out. A beginning might well be made with field techniques.

Another shifting frontier results from increased application of statistical tools. At all levels and in all categories, an effort is being made to substitute measured quantities for qualitative statements. Antitypes are set up for experimentation. Statistical theory is being tested for regional applications. Sampling is a statistical tool of proved merit at the micro-level. Its utility for research at higher levels is as yet unplumbed.

Sequence of change was invoked only sporadically and by very few individuals until the late 1920's. Since then, its introduction has revolutionized historical regional geography, and it is used more and more in studies of contemporary regions.

Individual effort sometimes appears too puny to cope with regions at the higher levels, especially if they are very complex or fraught with unusual problems. It has long been a custom to investigate remote and little known parts of the earth with a team. The members may all be geographers, or they may be drawn from a number of cognate fields.

The idea of joint effort was applied to areas cut off by war during the

1940's. Organized knowledge about such places was desperately needed. Group studies made and presented as integrated reports by several students, achieved compilations of vital and immediate worth to military personnel operating in various regional theatres. In some cases geographers with diverse specialties made strictly geographic studies; in other cases they were joined by ecologists from both the natural and societal disciplines, and by historians.

Regions at high levels, either grand divisions or realms, were also made the subjects of wartime training programs, and this plan has been perpetuated in a number of universities, with the object of training all-round specialists on particular regional areas.

Still another joint attack is made in the growing number of schools of regional planning. There the geographer-planner works with ecologists from half a dozen related fields. The problems are likely to be confined to relatively small regions. Cities are most often the subjects of study.

For successful group effort of any sort, the team must be balanced in training and outlook. In all regional studies geography of a sort emerges even if there is no geographer among the investigators. But the time has passed when such irresponsible but sporadic geography can be reckoned as satisfactory, or even acceptable. The opposite is increasingly recognized, viz. that geographers have been notably successful in directing or coordinating joint efforts. This appears to be a natural consequence of their pre-occupation with the region in all its aspects.

#### Presentation

Regional presentation has its frontier, no less than regional investigation. Standard practice in exposition is applicable to regional geography. In addition, methods of describing, analyzing, and interpreting regional

patterns and regional associations are undergoing continuous experimentation. In a special sense, the selection and preparation of maps, graphs, diagrams and photographs remains a perennial frontier of regional geography, because the techniques of illustration are rapidly advancing. Ever since World War I, the participation of geographers in regional study sponsored by government and planning agencies has been modifying academic presentation.

For the important opening paragraph experience seems to point to the inclusion of two items. It is essential to make a clear, unambiguous statement regarding the purpose for which the study is undertaken, the questions to be answered, or the problem or problems attacked. It is also essential to locate the area under consideration in its significant larger settings. These vary with the kind of region and its level in the hierarchy. Near the beginning of a regional study, too, it seems advisable to present a summary statement regarding the conclusions reached. If these recommendations are adopted, the reader is in a position to judge at the outset the utility of the paper for him, and to follow easily the argument and evidence as it is subsequently unfolded.

The order of topics almost organize themselves around their one subject. Between them and compages practice varies. Categories with a long record of publication, notably climates and landforms, have their own order of topics well fixed in the literature. The rule holds for other aspects of the natural environment, although with more variation. Most aspects of human geography, such as agricultural regions, have not become standardized. Their inherent traits are rarely recognized, to say nothing of the order of importance among those traits. The still larger frames, such as an economy, have no established order of topics whatever.



In presenting compages a procedure inherited from history of the geographic discipline is still widely followed. The environmental items were standardized early, and therefore tend to initiate the presentation. The order of elements is physical, biotic, and cultural. The physical items may conform to a rigid succession: climate, landforms, soil, and the rest. Alternatively, the scale of the paper may determine the initial topic: in the realm, climate comes first; in the province, landforms; in the district, soils. The other physical items are fitted in next, to be followed by plants and animals. The elements of the societal environment are brought in separately and afterward, but in no set order. Such an arrangement of topics unrealistically separates closely related features, e.g. climate, natural vegetation, and crops. It also lays an arbitrary stress on the natural environment as a whole, and especially upon the first topic taken up.

Instead of a fixed order of topics in presenting compages, a flexible arrangement of the subject matter appears to be a desirable substitute, and is being increasingly employed. The order is determined by the findings, and so is neither arbitrary nor haphazard.

If the purpose of the study is academic, i.e. the expository and interpretative description of a region, first place is given to the most significant or critical element or elements, followed by the others in diminishing order of importance in that particular region. Elements inextricably intertwined are thus treated in blocks, giving the writer the advantage of an unforced succession of topics. By this arrangement, the reader is left with a sharp impression of the appearance and essential character of the place, partly through the order of topics, and partly through the emphasis which first place lends.

If the purpose is to make a particular application of a regional study, the presentation may be modified. Probably it should begin with a clear statement of the special objective. Then are marshalled the elements on which the proposed application mainly rests, followed by those less relevant. Skill and care are required to make this kind of presentation without leaving the reader with a distorted concept of the regional actualities.

Whatever the purpose of the presentation, items of nature and items of culture appear where they are wanted, without reference to a rigid, preconceived order, or to the steps taken in the course of investigating the topic.

#### Measures of Progress

A practical stride in advancing the entire frontier of regional study would be construction of a world-map of each category at a high level in the hierarchy of aggregation-subdivision. This would presumably be at the level of the second division. Taking climatic regions as an example, it would not be a map of low, middle, and high latitude climates, but an analysis at the level represented by Köppen's first breakdown. Such maps exist for several categories, and are accepted in varying degrees. Others exist in adumbration; still others remain to be undertaken. A comprehensive series of such maps on a uniform scale would serve as frames of reference for studies at lower levels of subdivision, and would permit individuals concerned with any level to coordinate their studies and present them in terms understood by regional students everywhere.

One or two recent writers have bewailed the present state of regional study, and voice despair as to its prospects. For their defeatist attitude, they blame the miscellaneous assortment of studies on specific regions, the absence of an accepted system of regional order, and the conflicting

definitions of the region and regional geography that they find in print. They recommend taking refuge in topical geography, a course counter to the history of geographic thought, where regions and topics share the interest.

Apart from these few jeremiads, there appears to be no slackening of and devotion to regional study by geographers and others. In view of the proved vitality of the regional concept over the centuries, a wise course might well be participation in a concerted and sustained effort to grasp the purpose and utility of regions of all sorts, to systematize the procedure for investigating them, and so set up standards for presenting them to an ever-welcoming public. To make a start in that direction has been the aim of the Committee in here reporting the progress of American geography toward those goals.

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